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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,274	03/16/2001	Yasumi Sago	K-1968	4972

7590

10/01/2002

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EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
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1763

8

DATE MAILED: 10/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

8W

Office Action Summary

Application No.

09/809,274

Applicant(s)

SAGO ET AL.

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/06/01 and 7/5/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 3,4 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,9 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 17 January 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election of specie C in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Furthermore, it should be noted that claim 8 is considered a non-elected claim since it is dependent upon claim 3 which is also nonelected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 5, 7, and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Szapucki et al., U.S. Patent 6,050,216.

Szapucki et al. shows the invention as claimed including a plasma enhanced processing apparatus comprising: a process chamber in which a substrate is processed; a pumping system that pumps said processing chamber; a gas introduction system that introduces process gas into said process chamber; a plasma generation

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means that generates plasma in said process chamber by applying energy to said process gas; a substrate holder that holds said substrate in said process chamber (see, for example, col. 1-line 31 to col. 2-line 4); and wherein an opposite electrode (see fig. 2) facing to said substrate held by said substrate holder is provided, and the opposite electrode comprises a clamping mechanism (19,20,22a,22b) that clamps the front board (3,21) to support said front board (see col. 4-line 54 to col. 6-line 26).

With respect to claim 5, Szapucki et al. discloses a protector (22a,22b) covering a surface of said clamping mechanism wherein said surface is not exposed to plasma.

Furthermore, the front board (3,21) is made of silicon and the clamping plate is screwed on a member 1 to press said front board (3,21) onto said main body 1. With respect to the particular screwing torque, the claim is directed to the apparatus and since an apparatus is being claimed as the instant invention, the method of how the apparatus is manufactured is not considered to be the matter at hand. The apparatus of Szapucki et al. can be manufactured in a variety of ways to form the apparatus as shown in the Figures and text.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szapucki et al., U.S. Patent 6,050,216 in view of Lilleland et al., U.S. Patent 6,073,577.

Szapucki et al. is applied as above but fails to expressly disclose a protector for the clamping plate flush with the front board and a sheet made of carbon inserted between the front board and the main body. Lilleland et al. discloses an elastomeric joint composed of a polymer (which includes carbon) between a support frame and a silicon showerhead electrode (see abstract). Furthermore, Lilleland et al. also includes a plasma confinement ring 17 which is flush with the front board of the upper electrode (see col. 4-line 49 to col. 8-line 18). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Szapucki et al. so as to form the protector or plasma confinement ring flush with the front board as taught by Lilleland et al. because this would do a better job of limiting the plasma damage to the upper electrode. Additionally, it also would have

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been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Szapucki et al. so as to include an elastomeric joint between the front board and the main body as suggested by Lilleland et al. because this allows movement between the front board and the main body in order to account for thermal expansion during processing (see abstract, lines 9-13).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Szapucki et al., U.S. Patent 6,050,216 in view of Back, U.S. Patent 5,670,218.

Szapucki et al. is applied as above but fails to expressly disclose a cooling mechanism that cools said front board via said main body. Back discloses a cooling mechanism 8,9 that is used to cool an upper electrode 3 (see fig. 1 and col. 8-lines 60-63). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Szapucki so as to include a cooling element in the upper electrode as suggested by Back because this prevent any unnecessary gas phase reactions and also prevents any long term damage to the showerhead electrode.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lilleland et al., U.S. 2001/0031557, Degner et al., U.S. Patent 5,074,456, Hwang, U.S. Patent 6,030,489, and Powell, U.S. Patent 5,209,803 show the state of the art of clamping electrode structures for a plasma apparatus.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 305-4545. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills, can be reached on 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 872-9310 for regular communications and 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.


Luz L. Alejandro
Patent Examiner
Art Unit 1763

September 26, 2002